## EXERCISE 2: CABLING – STRAIGHT THROUGH AND CROSS-OVER CABLING

Ethernet cable:

An Ethernet cable is a network cable used for high-speed wired network connections between two devices. This network cable is made of four-pair cable, which is consists of twisted pair conductors. It is used for data transmission at both ends of the cable, which is called RJ45 connector.

The Ethernet cables are categorized as Cat 5, Cat 5e, Cat 6, and UTP cable. Cat 5 cable can support a 10/100 Mbps Ethernet network while Cat 5e and Cat 6 cable to support Ethernet network running at 10/100/1000 Mbps.

Straight Through Cable:
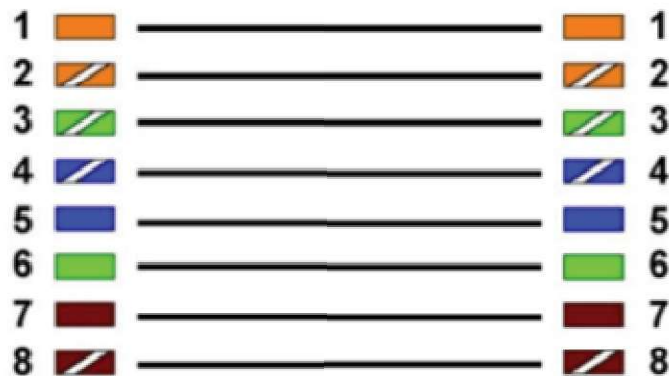
Straight Through Cable

Straight-through cable is a type of CAT5 with RJ-45 connectors at each end, and each has the same pin out. It is in accordance with either the T568A or T568B standards. It uses the same color code throughout the LAN for consistency. This type of twisted-pair cable is used in LAN to connect a computer or a network hub such as a router. It is one of the most common types of network cable.

Crossover Cable:
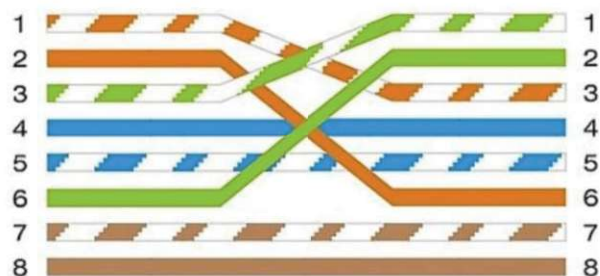
Crossover Cable

A Crossover cable is a type of CAT 5 where one end isT568A configuration and the other end as T568BConfiguration. In this type of cable connection, Pin 1 is crossed with Pin 3, and Pin 2 is crossed with Pin 6.

Crossover cable is used to connect two or more computing devices. The internal wiring of crossover cables reverses the transmission and receive signals. It is widely used to connect two devices of the same type: e.g., two computers or two switches to each other.

In regard to physical appearance, Crossover Ethernet cables are very much similar to regular Ethernet cables. Still, they are different with regard to the order with which the wires are arranged. This type of Ethernet cable is made to connect to network devices of the same kind over Ethernet directly. Crossover cables are mostly used to connect two hosts directly.

Devices Connectivity:

DEVICES	HUB	SWITCH	ROUTER	PC
HUB	**CO**	**CO**	**ST**	**ST**
SWITCH	**CO**	**CO**	**ST**	**ST**
ROUTER	**ST**	**ST**	**CO**	**CO**
PC	**ST**	**ST**	**CO**	**CO**

EXERCISE 2.A DEMONSTRATION OF P2P NETWORK

Objective:

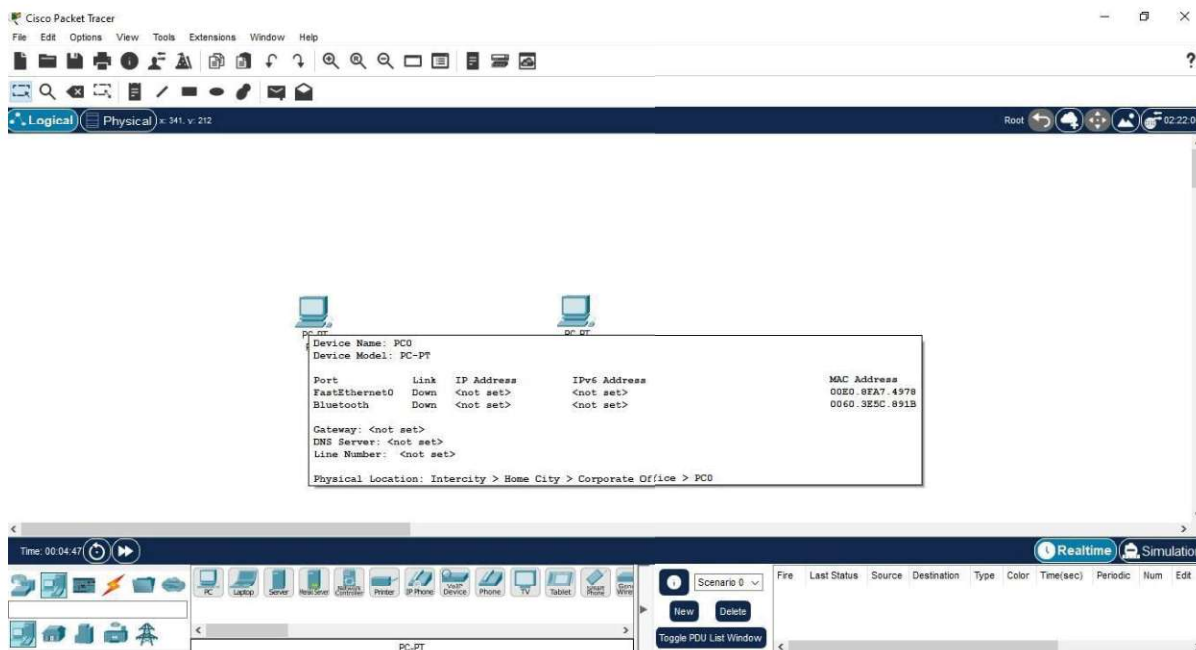To demonstrate the Copper Cross-over cabling by designing a Peer to Peer Network

Components:

Devices	Required Nos
PCs	2
Copper Cross – Over Cable	1

Addressing Table:

Device	Interface	IP Address	Subnet Mask
PC0	Fa0/0	192.168.10.1	255.255.255.0
PC1	Fa0/0	192.168.10.2	255.255.255.0

Procedure:

Step 1: Drag 2 PCs in the console area. Each PC will have interfaces as shown in the figure.
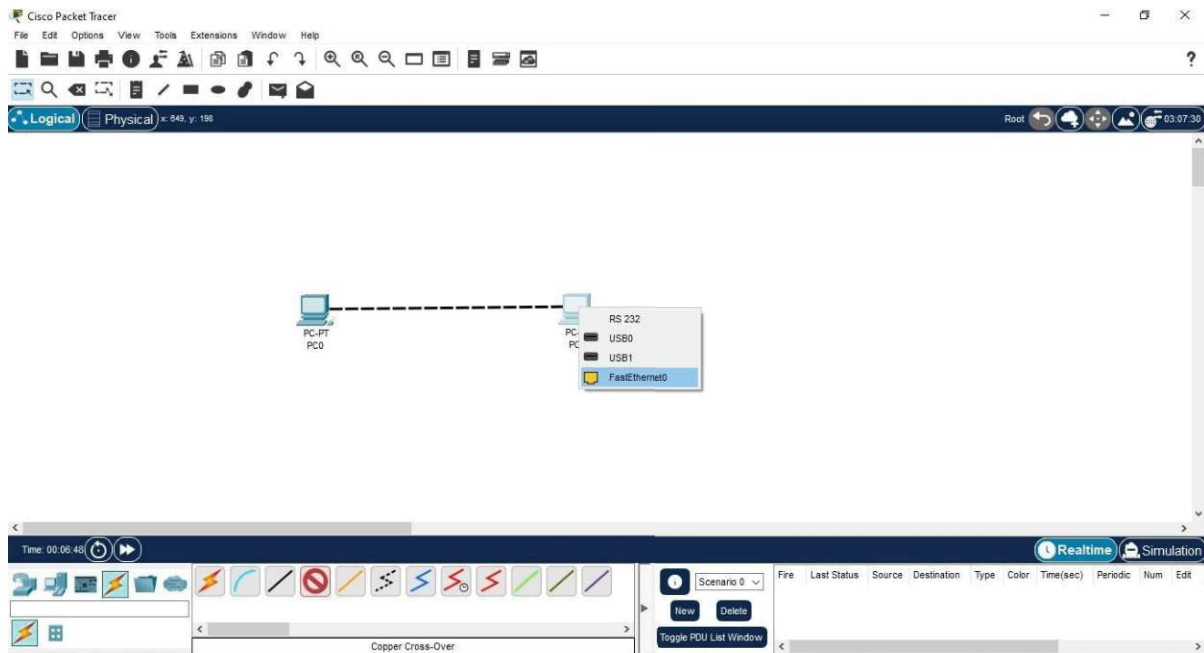
Step 2: Select Connectivity & Copper cross-over cable.
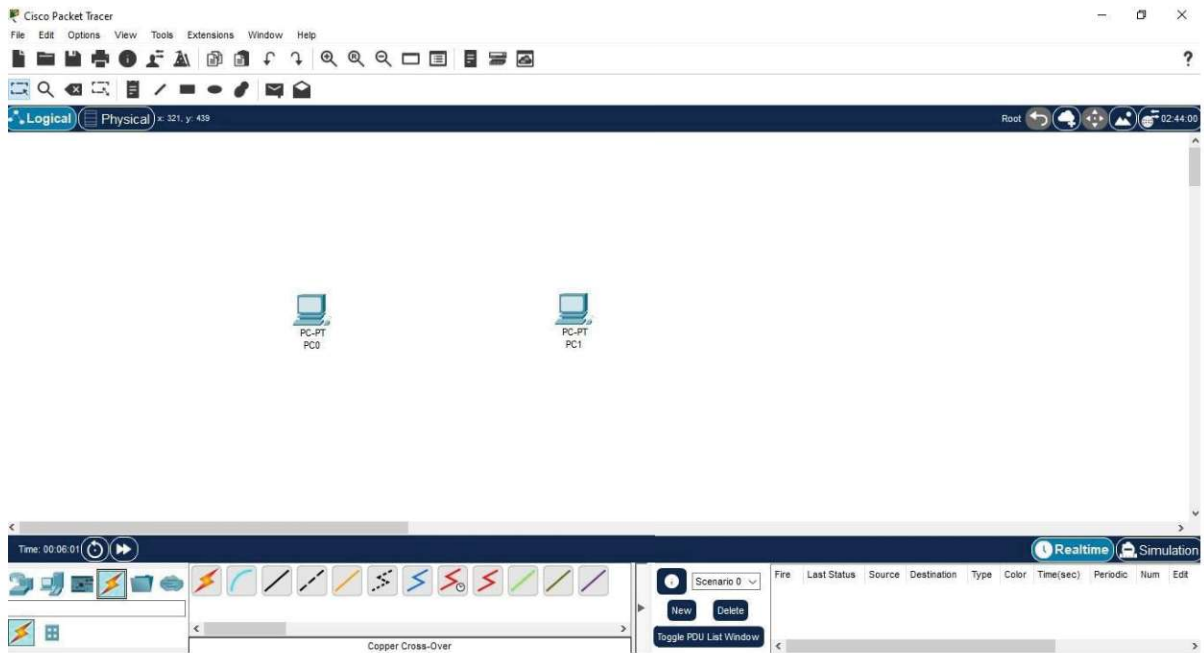
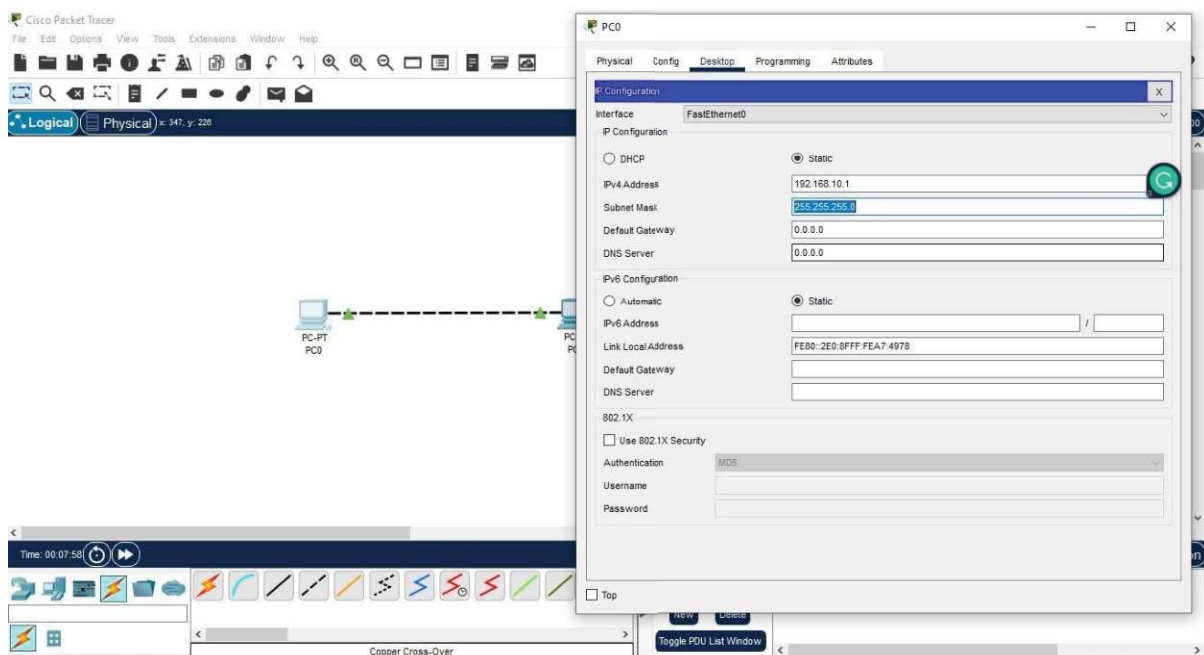**Step 3:** Click on PC0 to get the interface options. Select Fa0/0
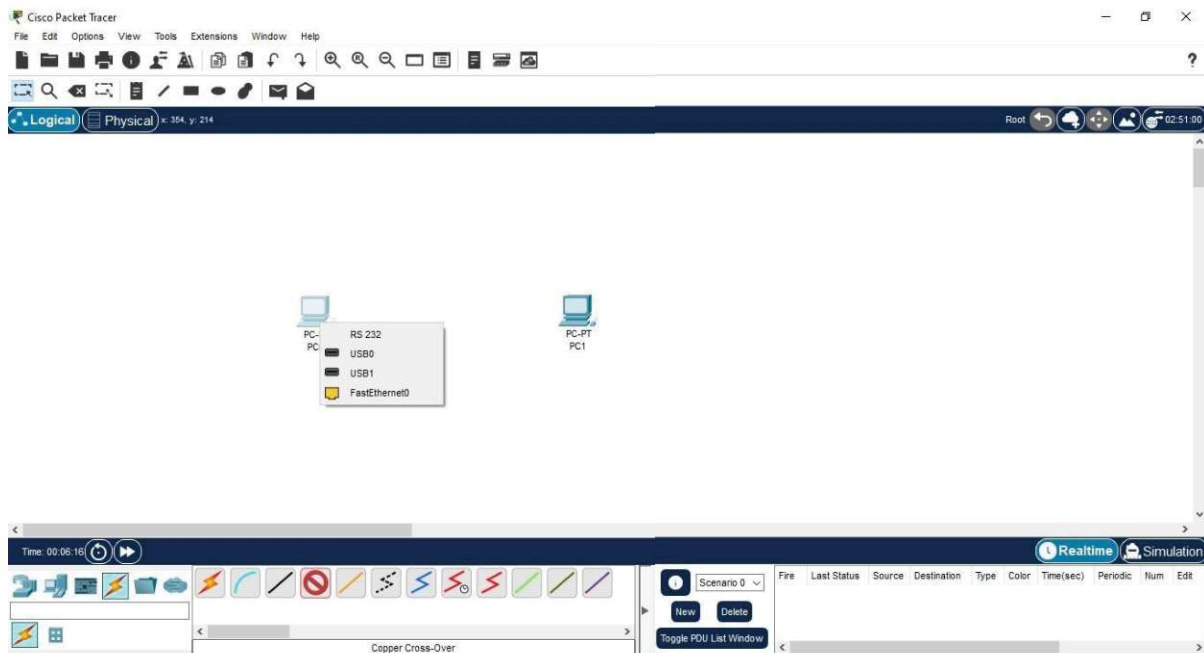
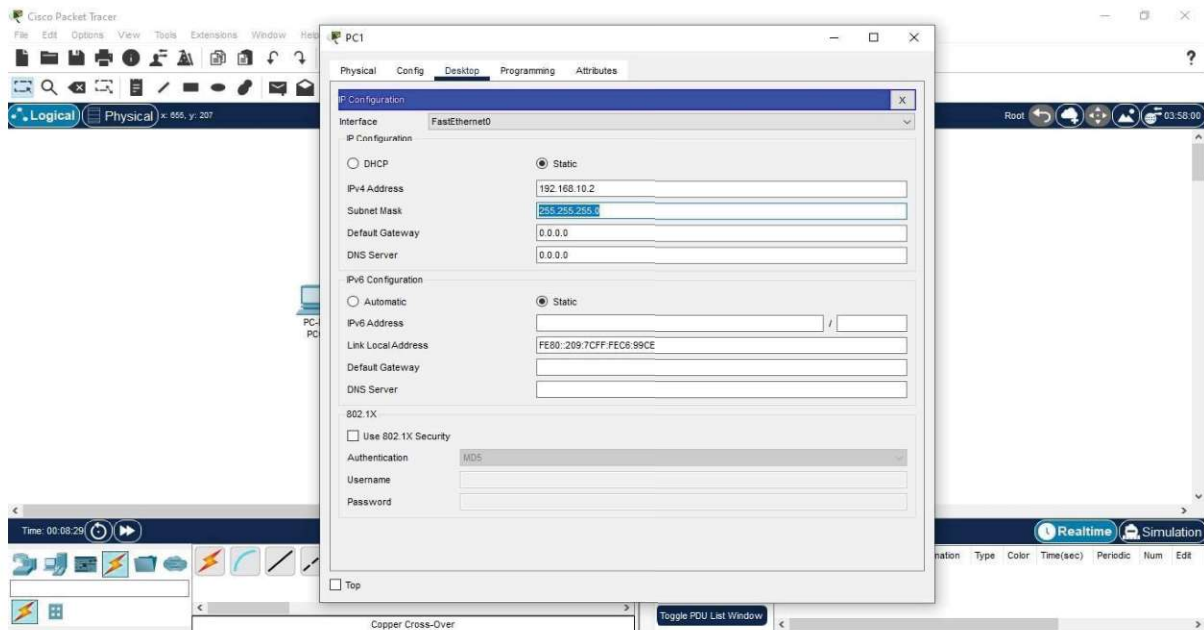**Step 4:** Click on PC1 to get the interface options and select Fa0/0.

Step 5: Now the PCs are physically connected. To establish logical connectivity,

- Click on PC0.

- Select Desktop tab.

- Click on IP Configuration icon.

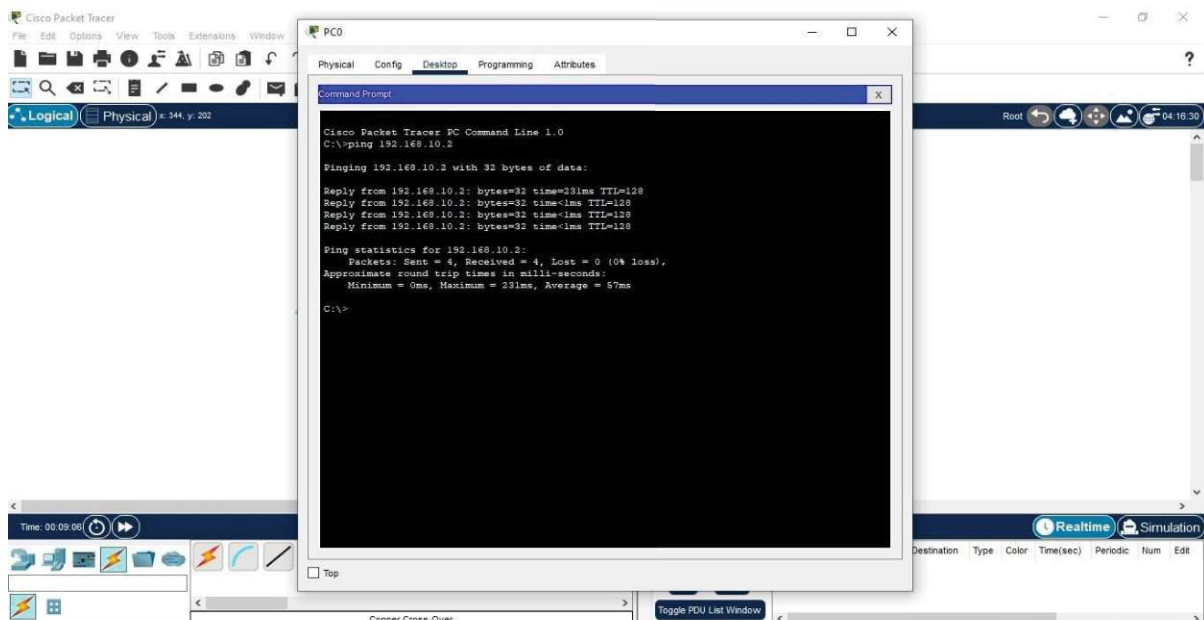- Configure as in the following figure

Step 6: Configure IP address for PC1 with the same procedure.

Step 7: Now both the PCs are physically and logically connected. To check the logical connectivity,

- Click on PC0.
- Select Desktop tab.
- Click on Command Prompt icon.
- Type ping 192.168.10.2 to fetch the output as follows

EXERCISE 2.B - DEMONSTRATION OF SIMPLE LAN & TOPOLOGIES

Objective: To demonstrate the straight through cabling by designing a Local Area Network

Components:

Devices	Required Nos
PCs	2
Copper Straight – Through Cables	2
Switch	1

Addressing Table:

Device	Interface	IP Address	Subnet Mask
PC0	Fa0/0	192.168.10.1	255.255.255.0
PC1	Fa0/0	192.168.10.2	255.255.255.0

Procedure:

Step 1: Drag 2 PCs and a switch in the console area. Each PC will have interfaces as shown in the figure.
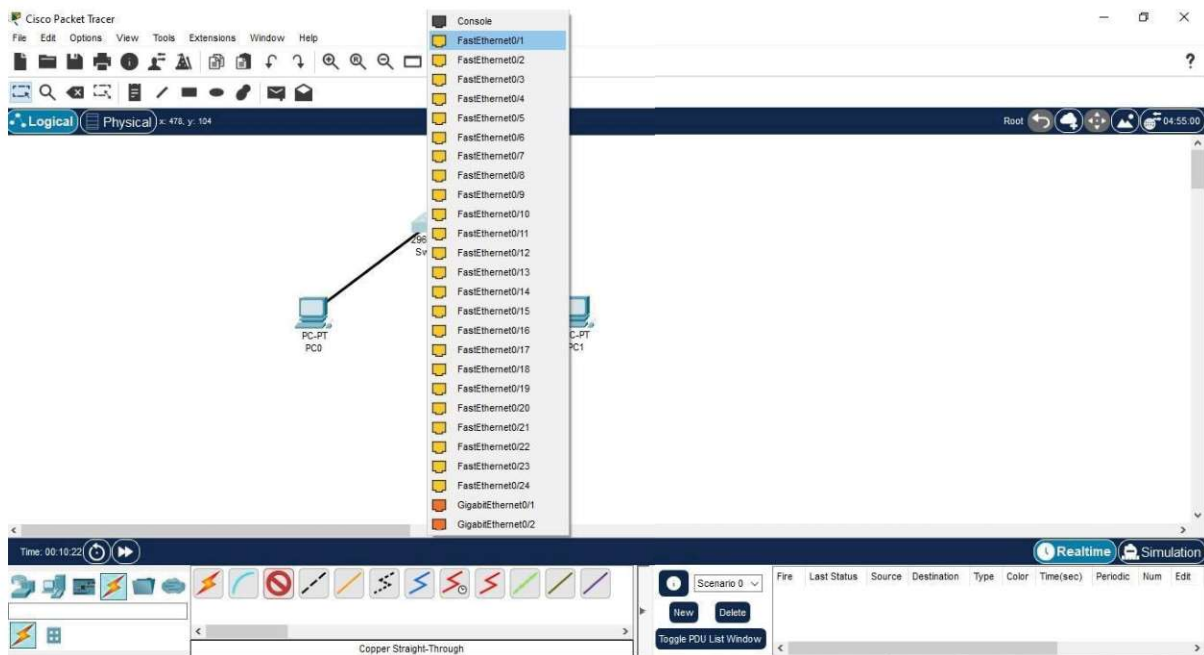
Step 2: Select Connectivity & Copper Straight-Through cable. Click on PC0 to get the interface options. Select Fa0/0
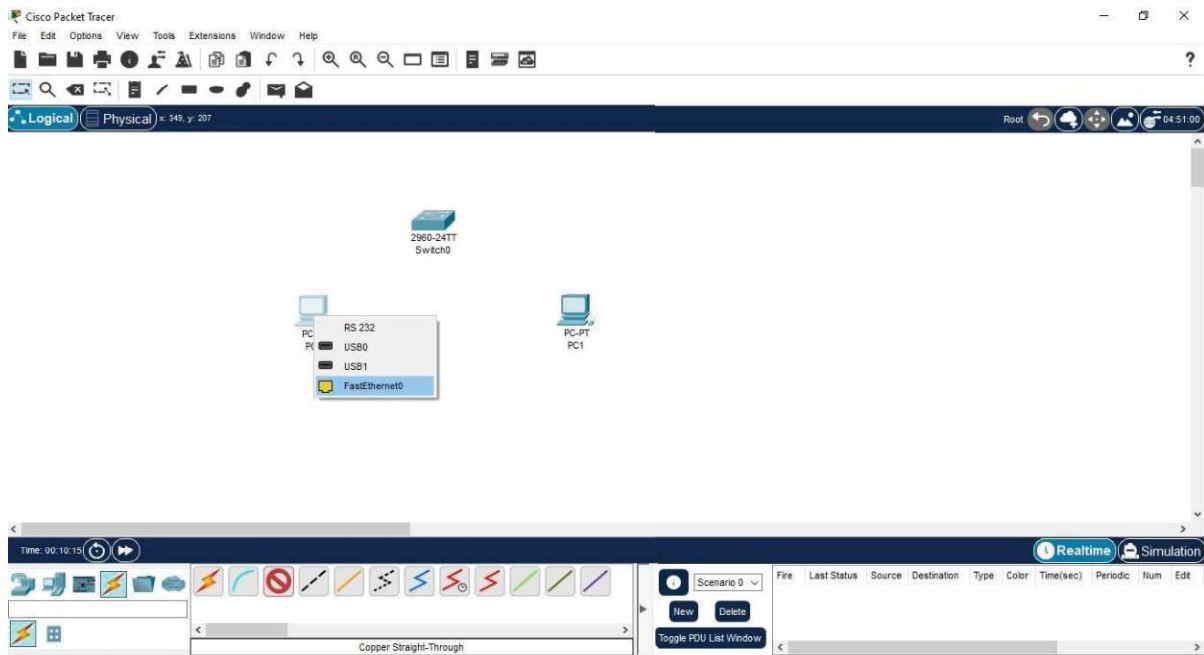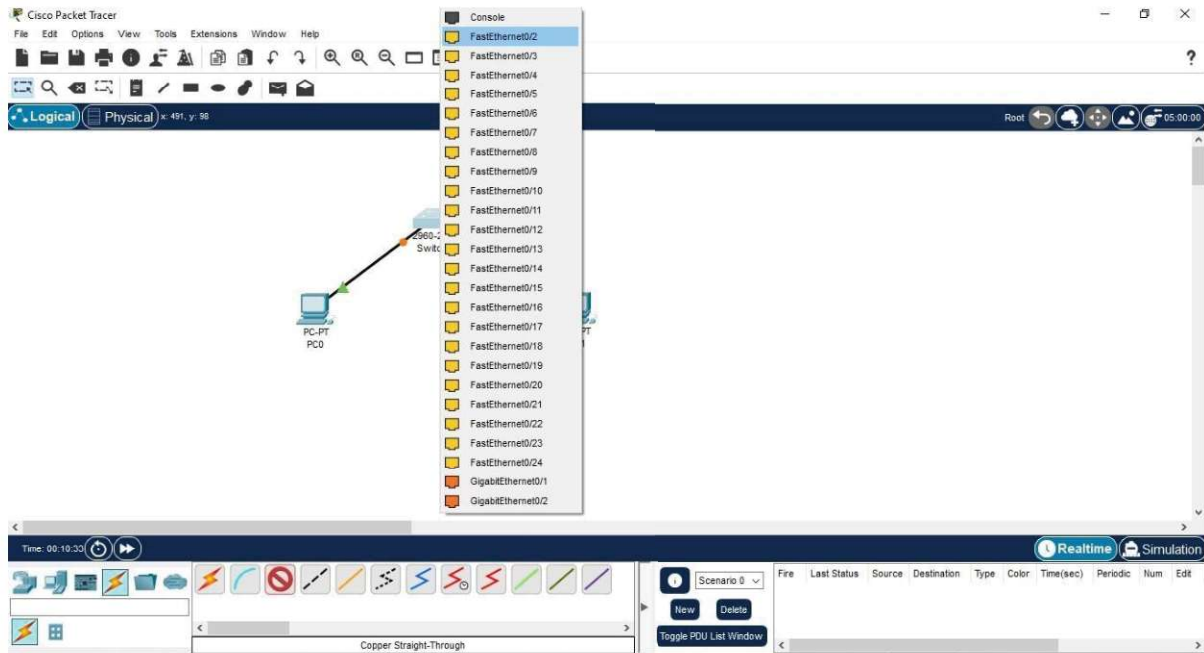

Step 3: Click on Switch to get the interface options and select Fa0/0.
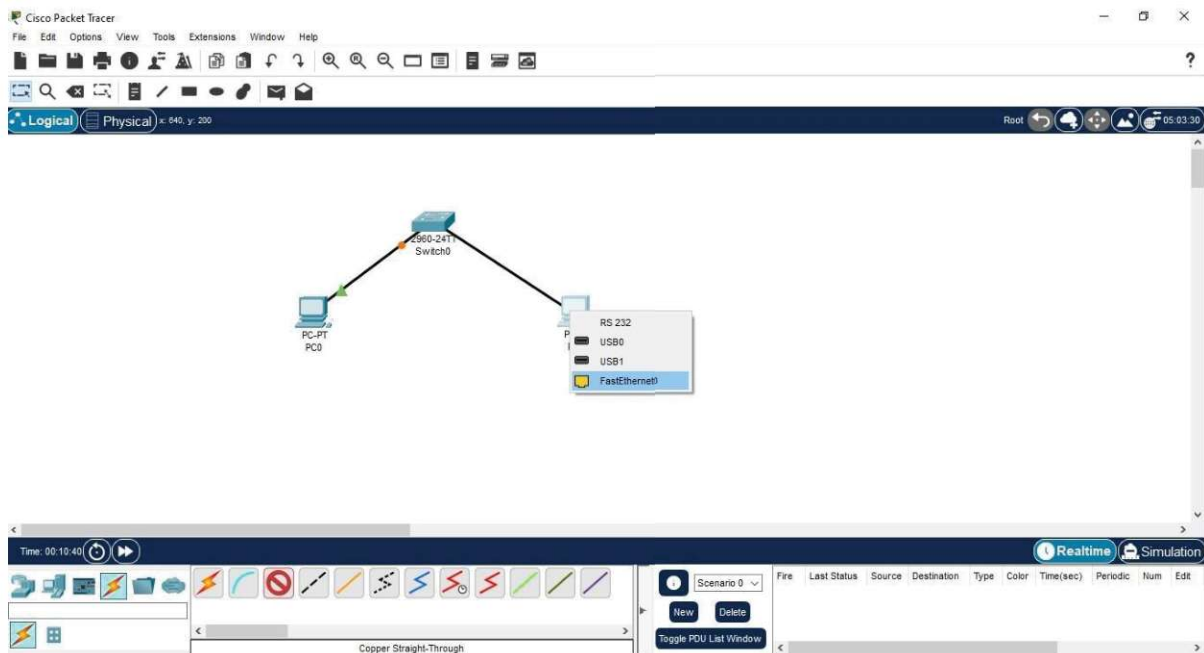
Step 4: Now PC0 and Switch are physically connected. Again select copper straight-through cable and again click on Switch to get the interface options and select Fa0/1.

**Step 5:** Click on PC1 to get the interface options and select Fa0/0.

Step 6: Now the PCs are physically connected through switch. To establish logical connectivity,

- Click on PC0.
- Select Desktop tab.
- Click on IP Configuration icon.
- Configure the ip address 192.168.10.1 and subnet mask 255.255.255.0
- Repeat the same procedure for PC1 and configure with the ip address 192.168.10.2 and subnet mask 255.255.255.0

Step 7: Now both the PCs are physically and logically connected. To check the logical connectivity,
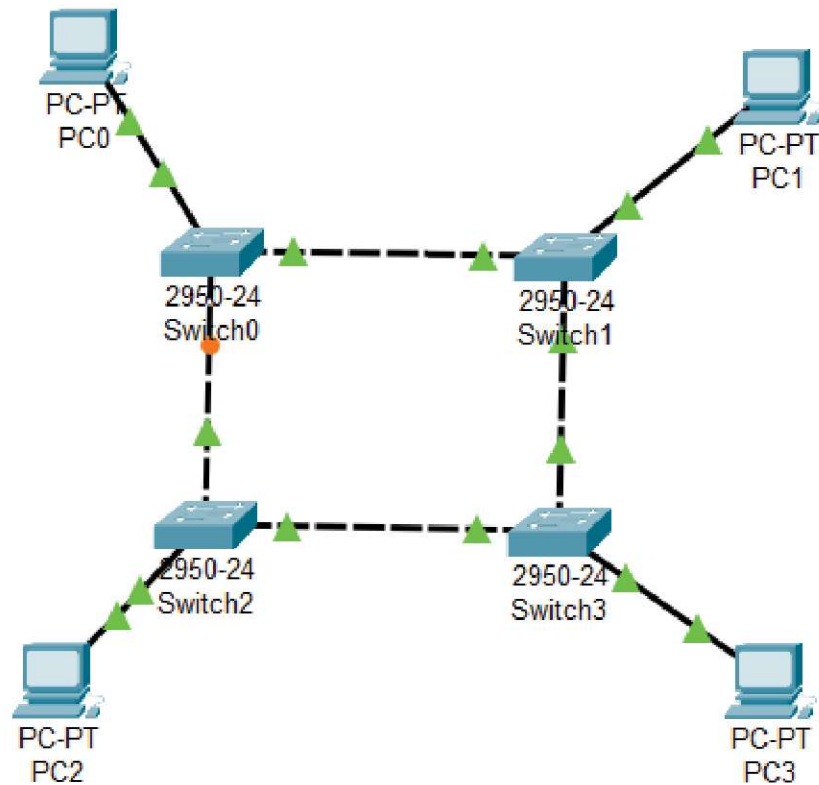
- Click on PC1.
- Select Desktop tab.
- Click on Command Prompt icon.
- Type ping 192.168.10.1 to fetch the output as follows
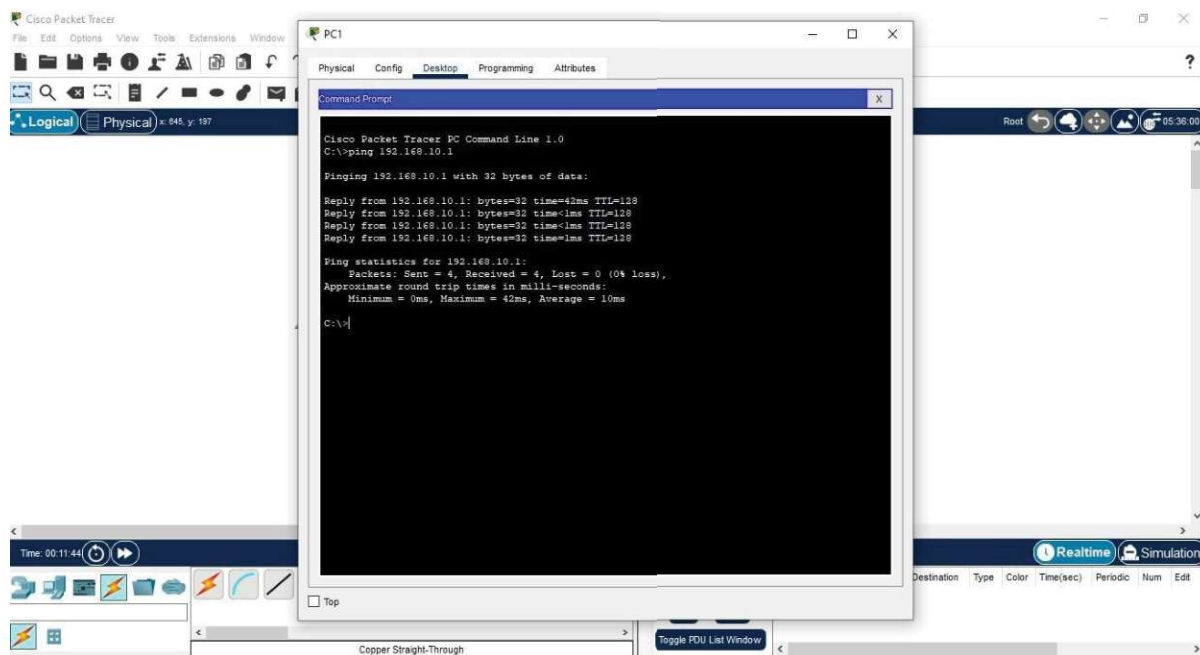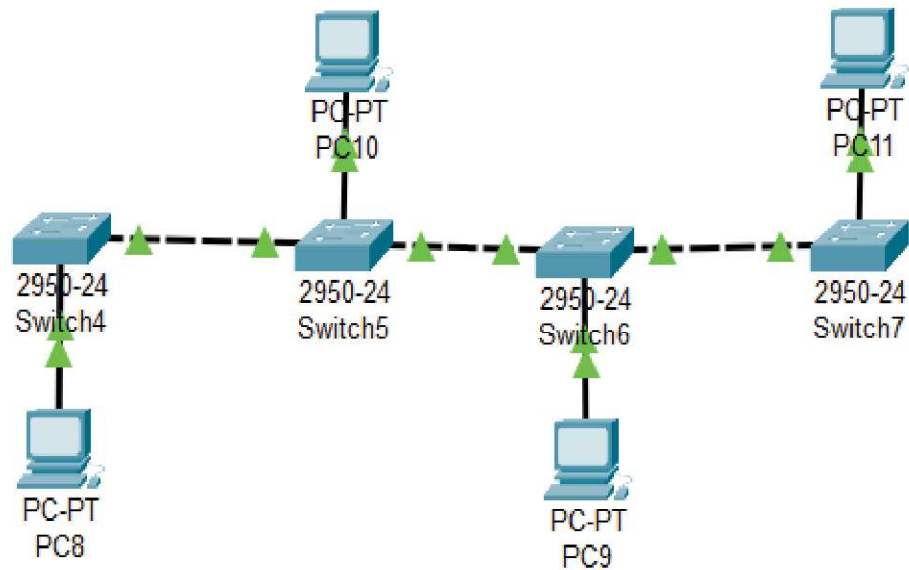

Now you have to implement the different types of Network Topologies as given below.

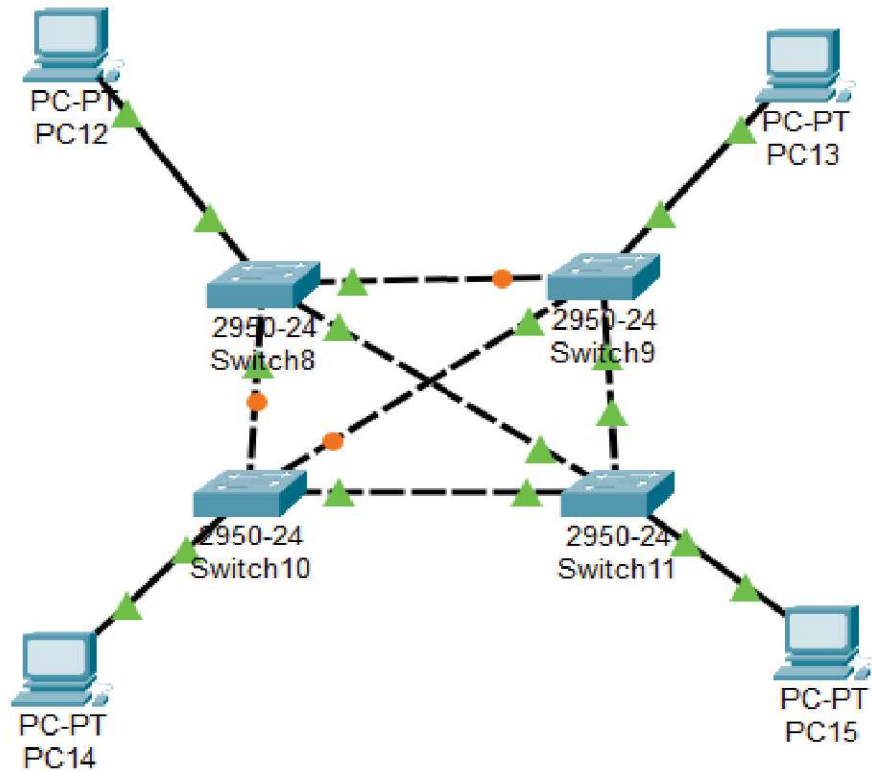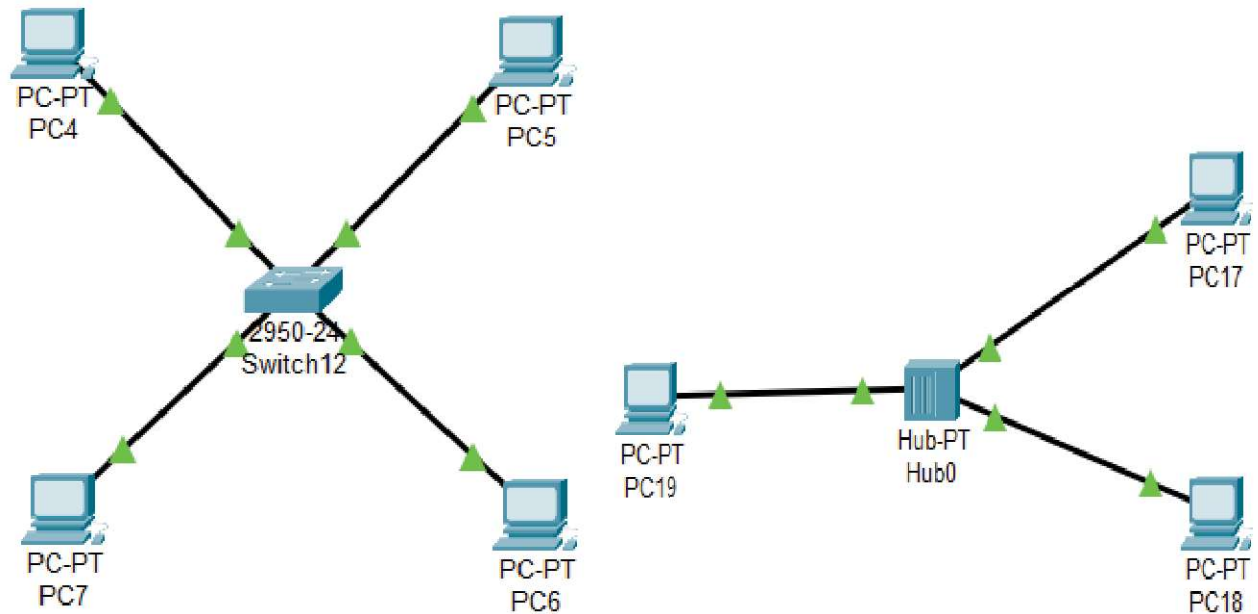**Note: Remember you need to assign IP address for all the PC's.**

Ring Topology

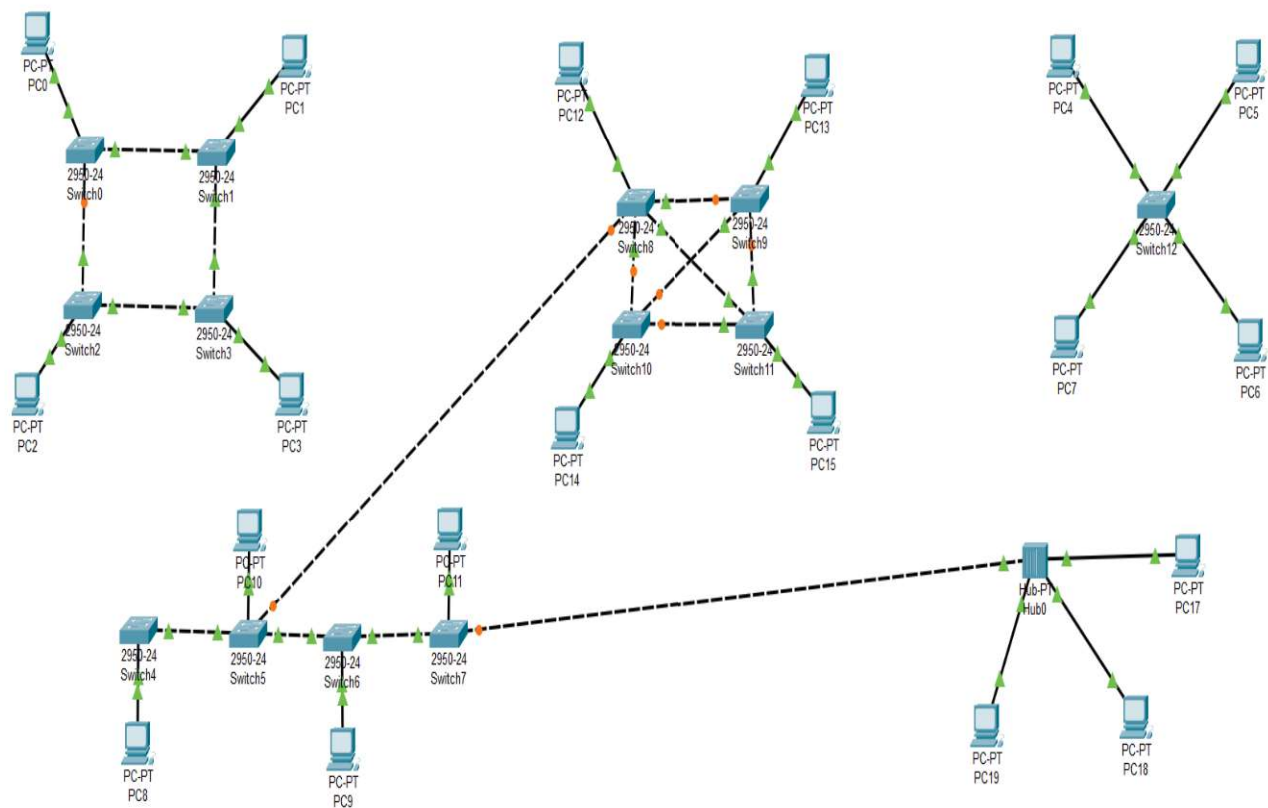
Bus Topology

Mesh Topology

Star Topology

Hybrid Topology

Result:

Thus, the demonstration of P2P and Network topologies is done successfully.